

09/747180 "09/24/99

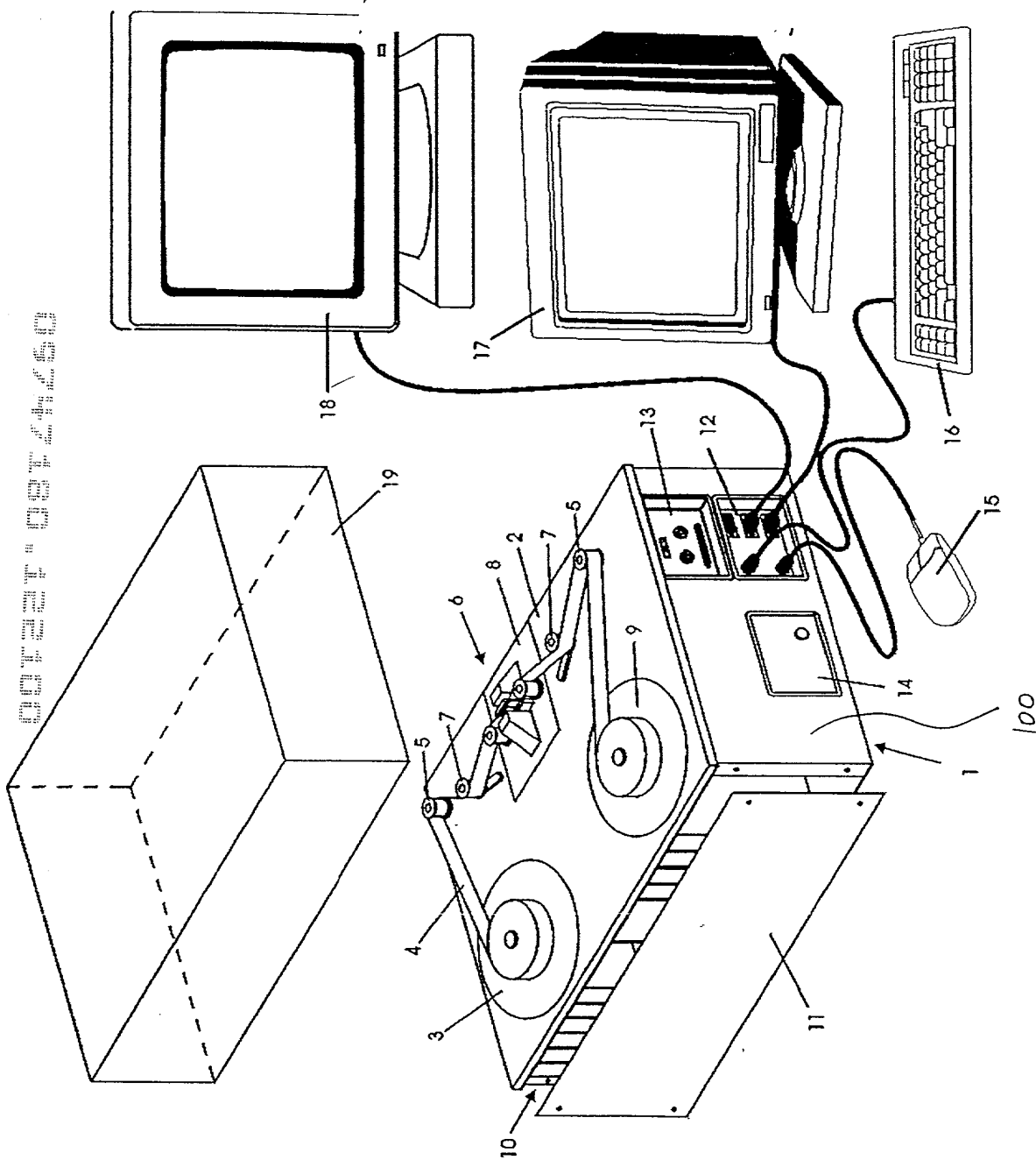


Figure 1

Jc929 U.S. PTO

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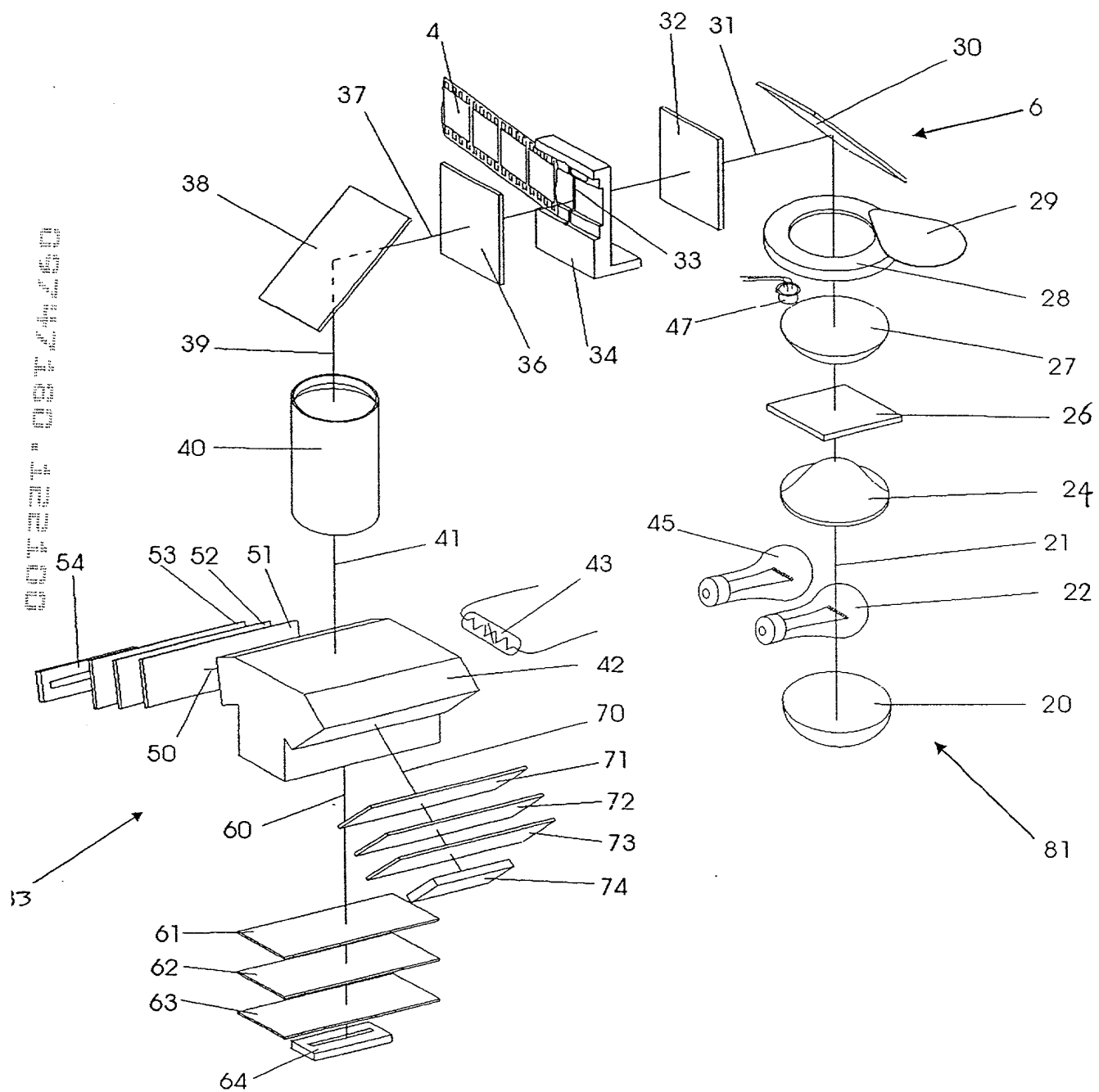


Figure 2

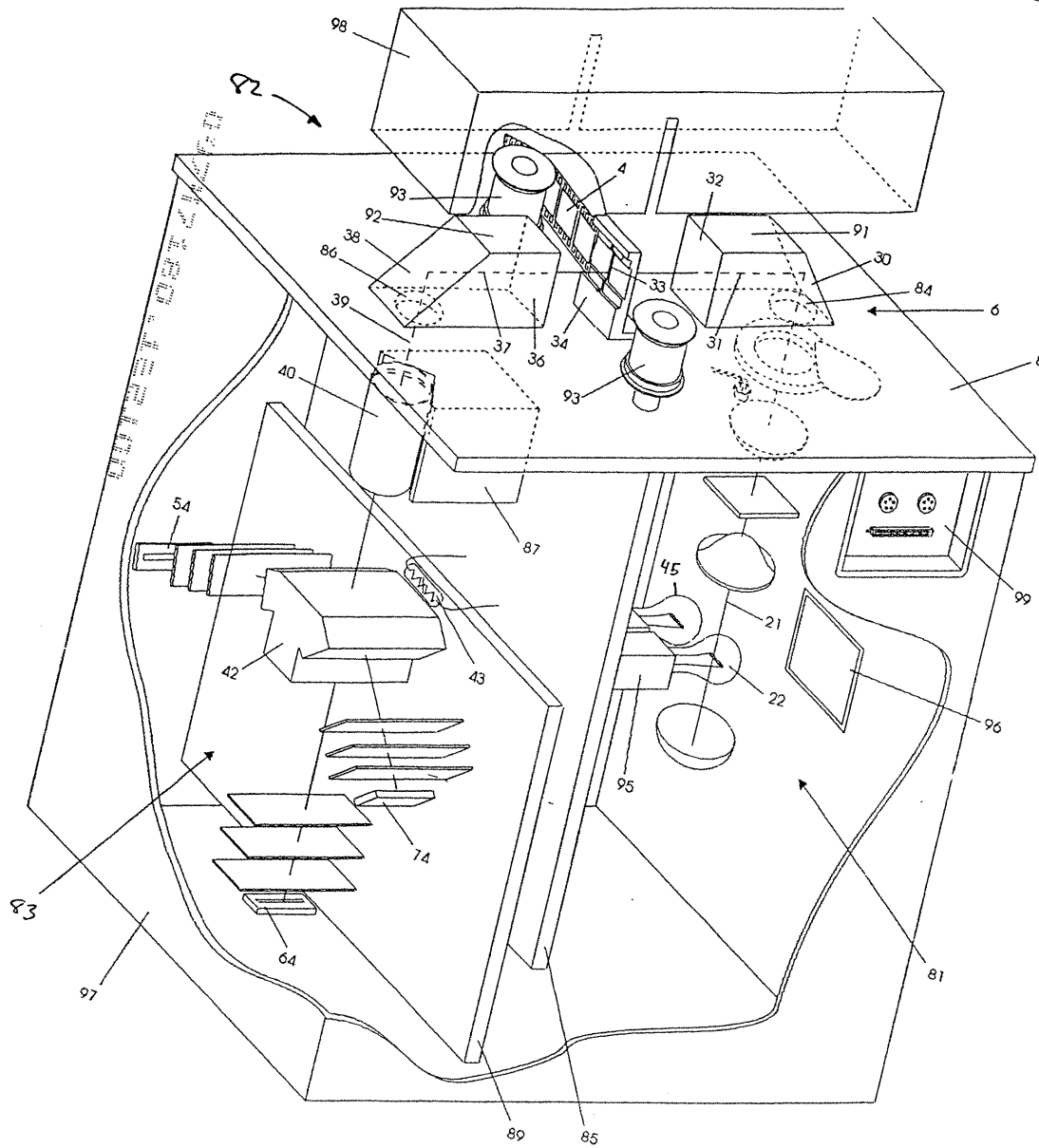


Figure 3

Figure 4

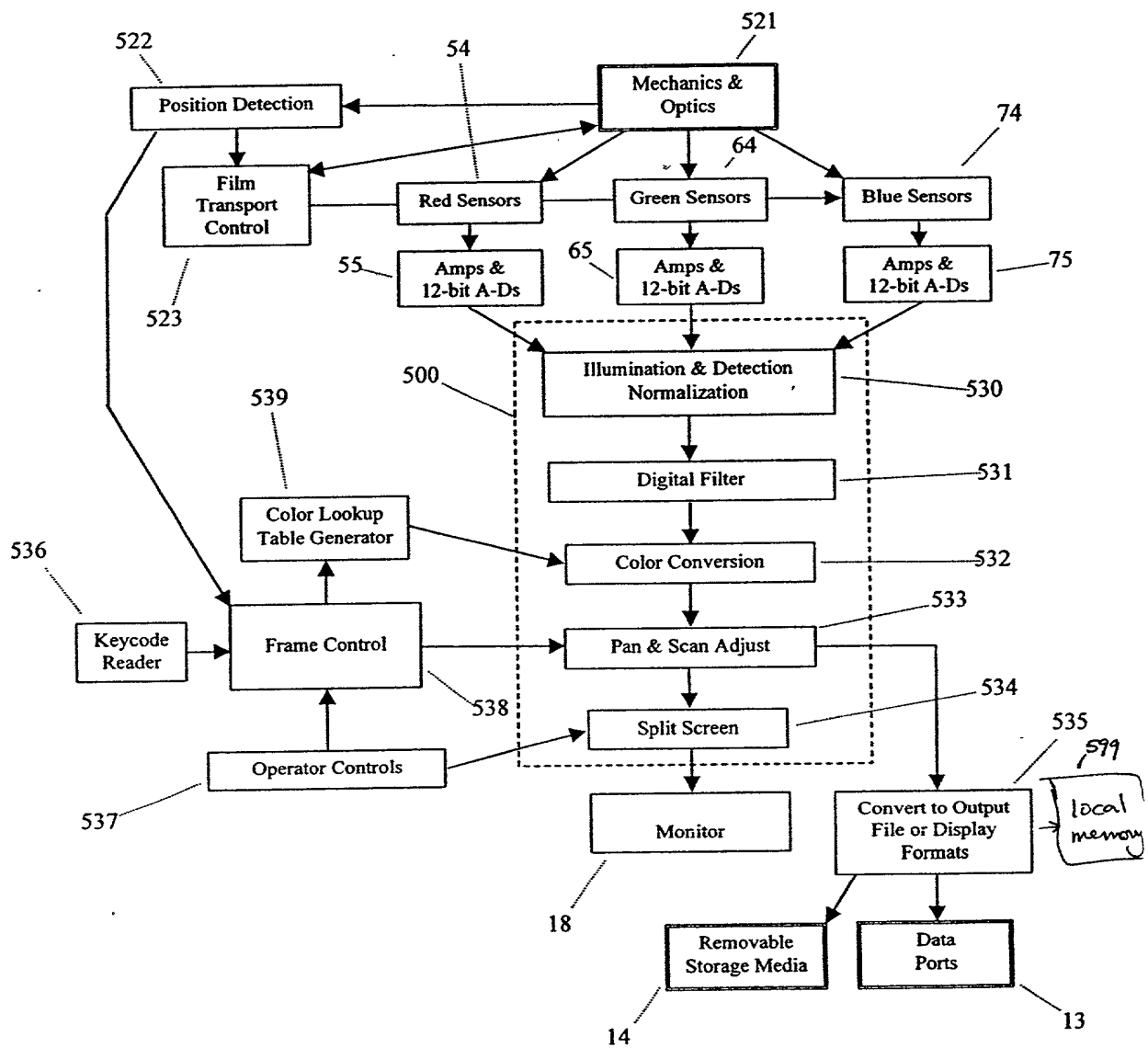


FIG. 5

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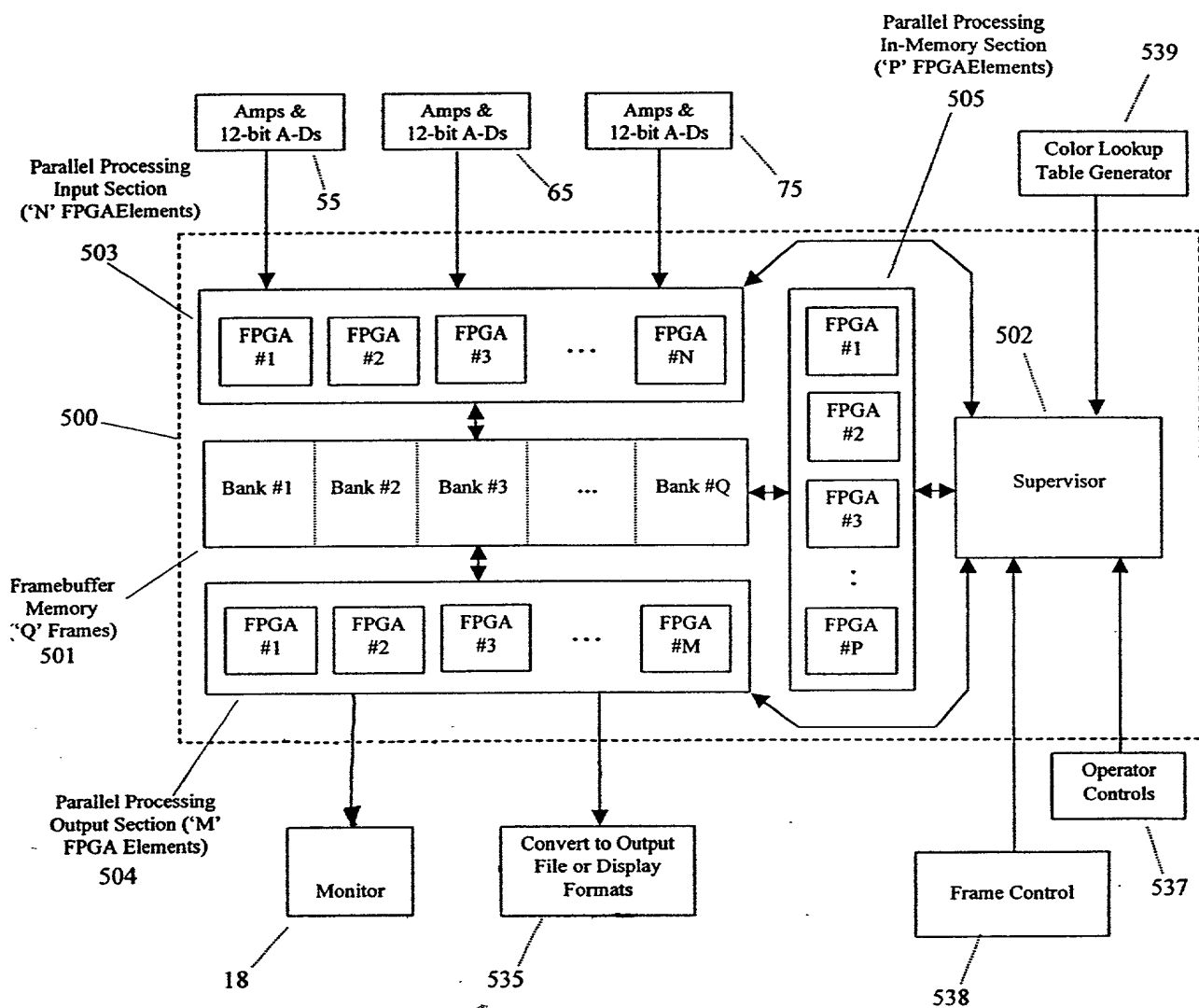


FIG. 6

The diagram illustrates a digital audio processing system 701. It features four input sources on the left: a Variable-Speed Audio Source Device 751, a Real-Time-Only Audio Source 752, a Digital Audio Source 753, and Other Information Relating to the Film (other than sound) 754. These inputs feed into a central processing block 760. Inside 760, the Variable-Speed Audio Source Device 751 connects to Telecine Rate Synchronization 755. The Real-Time-Only Audio Source 752 connects to Analog-to-Digital Conversion 756. The Digital Audio Source 753 connects to Adjust Digital Audio Rate 759. The Other Information 754 connects to Adjust Digital Data Rate 760. The Telecine Rate Synchronization 755 and Adjust Digital Audio Rate 759 blocks both feed into the Buffer Digital Data 757. The Analog-to-Digital Conversion 756 also feeds into the Buffer Digital Data 757. The Buffer Digital Data 757 feeds into Frequency Shifting (Pitch Adjust) 758. The Adjust Digital Data Rate 760 and Frequency Shifting (Pitch Adjust) 758 both feed into the Convert to Output File or Display Formats 535 block. Finally, the Convert to Output File or Display Formats 535 block outputs to Removable Storage Media 14 and Data Ports 13.

FIG. 7

TABLE A - FILM INPUT FORMATS

35 mm Film Format ¹	Aspect Ratio	Image Width (inches)	Image Height (inches)	Image to Film Frame Ratio
Full-frame (Super 35)	1.33:1	0.981	0.735	1.02
Academy	1.37:1	0.864	0.630	1.18
Anamorphic	1.18:1	0.864	0.630	1.18
1.85:1	1.84:1	0.864	0.469	1.59
3 Perf 1.85:1	1.84:1	0.864	0.560	1.33
TV 4:3	1.33:1	0.816	0.612	1.22
TV 16:9	1.78:1	0.816	0.531	1.41
3 Perf TV 16:9	1.78:1	0.816	0.560	1.33

¹4 Perf unless otherwise specified

TABLE B - TELECINE TO SDTV THROUGHPUT RATES

35 mm Film Format ¹	SDTV					
	480 x 640 Scan			480 x 704 Scan		
	Exposure (μs)	Rate (FPS)	x Real-Time (24 FPS)	Exposure (μs)	Rate (FPS)	x Real-Time (24 FPS)
Full-Frame (Super 35)	10.73	190.29	7.93	11.80	173.09	7.21
Academy		164.49	6.85		149.62	6.23
Anamorphic		164.49	6.85		149.62	6.23
1.85:1		122.08	5.09		111.04	4.63
3 Perf 1.85:1		145.94	6.08		132.75	5.53
TV 4:3		159.10	6.63		144.72	6.03
TV 16:9		137.66	5.74		125.22	5.22
3 Perf TV 16:9		145.94	6.08		132.75	5.53

¹4 Perf unless otherwise specified

Figure 8A

TABLE C – TELECINE TO HDTV THROUGHPUT RATINGS

35 mm Film Format ¹	HDTV					
	720 x 1280 Scan			1080 x 1920 Scan		
	Exposure (μs)	Rate (FPS)	x Real-Time (24 FPS)	Exposure (μs)	Rate (FPS)	x Real-Time (24 FPS)
Full-Frame (Super 35)	21.40	63.63	2.65	32.07	28.31	1.18
Academy		55.00	2.29		24.47	1.02
Anamorphic		55.00	2.29		24.47	1.02
1.85:1		40.82	1.70		18.16	0.76
3 Perf 1.85:1		48.80	2.03		21.71	0.90
TV 4:3		53.20	2.22		23.67	0.99
TV 16:9		46.03	1.92		20.48	0.85
3 Perf TV 16:9		48.80	2.03		21.71	0.90

¹4 Perf unless otherwise specified

TABLE D – VIDEO OUTPUT FORMATS

Video Format			Interlace	Aspect Ratio	Frame Rates ¹ (Hz)	Film Input Scan Rate (FPS)	Real-Time Telecine Throughput ²
TV		NTSC	i	4:3	29.97	48	x 5
		PAL	i	4:3	25	48	x 5
		SECAM	i	4:3	25	48	x 5
DTV	SDTV	480 x 640	i	4:3	30	48	x 5
		480 x 640	P	4:3	24, 30, 60	48	x 5
		480 x 704	i	16:9	30	48	x 2
		480 x 704	P	16:9	24, 30, 60	48	x 2
	HDTV	720 x 1280	P	16:9	24, 30, 60	24	x 1
		1080 x 1920	i	16:9	30	18	x 3/4
		1080 x 1920	P	16:9	24, 30	18	x 3/4

¹with requisite pulldowns ²with film shot at 24 FPS

Figure 8B